MICROSENS

User's Manual

10/100/1000Base-T to 1000Base-X PoE PSE GbE Media Converter

Release 1.0

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Caution

Circuit devices are sensitive to static electricity, which can damage their delicate electronics. Dry weather conditions or walking across a carpeted floor may cause you to acquire a static electrical charge.

To protect your device, always:

- Touch the metal chassis of your computer to ground the static electrical charge before you pick up the circuit device.
- Pick up the device by holding it on the left and right edges only.

European Community (CE) Electromagnetic Compatibility Directive

This equipment has been tested and found to comply with the protection requirements of European Emission Standard EN55022 and EN55024.

EMI	EN55022:2006 Class A
	EN61000-3-2:2006
	EN61000-3-3:1995+A1:2001+A2/2005+A1/2001+A2/2005
EMS	EN55024/1998+A1:2001+A2:2003
	→IEC61000-4-2:2001
	→IEC61000-4-3:2002+A1:2002
	→IEC61000-4-4:1995+A1:2000+A2:2001
	→IEC61000-4-5:2001
	→IEC61000-4-6:2003
	→IEC61000-4-8:2001
	→IEC61000-4-11:2001

1. Overview

10/100/1000Base-T to 1000Based-SX/LX (SC/LC) IEEE802.3z/ab GbE media converter, which allows two types of network segments to be connected easily and inexpensively. Complied with IEEE802.3af Power Over Ethernet standard, this AC powered PoE media converter is a Power Sourcing Equipment (PSE) which combines data received over a TP link with –48VDC power, providing power to IEEE802.3af powered device (PD) over the existing CAT5 UTP cable. The converter includes a PD signature sensing and power monitoring features. Other features include over-current protection, under-current detection and fault protection input. The LFP (Link Fault Pass-through) allows the media converter to monitor both the fiber and copper RX ports for loss of signal. In case of a loss of RX signal on one media port, the converter will automatically disable the TX signal to the other media port, thus passing through the link fault. FEF (Far End Fault) enables the converter to stop sending link pulse to the link partner once a loss of the fiber RX signal is encountered. Then the link partner will synchronously stop sending data. FEF prevents loss of valuable data transmitted over invalid link. Combining LFP and FEF troubleshooting features, both end devices can be notified of a loss of fiber link.

2. Model Description

Model	Description
MS400080	10/100/1000Base-T to 1000Base-SX PoE PSE GbE converter, MM SC
MS400082	10/100/1000Base-T to 1000Base-LX PoE PSE GbE converter, SM SC 10km

3. Checklist

Before you start installing the Converter, verify that the package contains the following:

- The PoE PSE TP-Fiber Converter
- AC Power Cord
- This User's Manual

Please notify your sales representative immediately if any of the aforementioned items is missing or damaged.

4. Installing the Converter

PSE TP-Fiber Converter with Powered Device (PD)

⇒ Connect the PSE media converter to an AC power source

⇒ Install the TP media cable to the IEEE 802.3af PD converter

(See Fig. 2)

Note: It can work as a pure converter that connects to the non-PoE converter.

⇒ Install the media cable for network connection

Warning:

⇒ Verify that the AC input conforms to your country AC power requirement and then insert the power plug

⇒ Ensure that the power of PSE device is turned on

⇒ Install the media cable for network connection

TP Port	**10/100Base-TX** Auto-Negotiation Auto-MDIX flow control for Full-Duplex backpressure for Half-Duplex
	1000Base-TX Auto-Negotiation mode Auto-MDIX only for Auto-Negotiation flow control for Full-Duplex only
Fiber Port	**1000Base-SX/LX (SC/LC)** with NWay flow control Link partner must be 1000FDX with NWay flow control

Fig. 1 The View of PoE PSE Media Converter

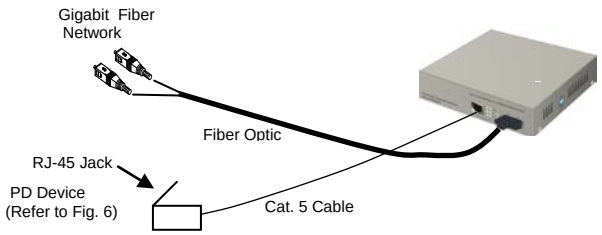

Fig. 2 Connection among PSE PoE Converter, Fiber and TP Cables

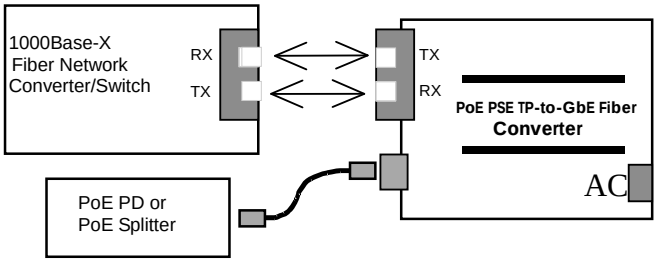

Fig. 3 PSE to PD or PoE Splitter

Fig. 4 PoE PSE Media Converter Front Panel

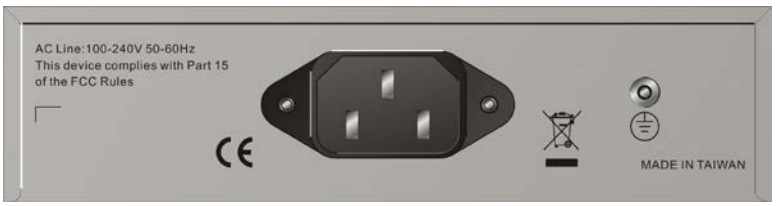

Fig. 5 PoE PSE Media Converter Rear Panel

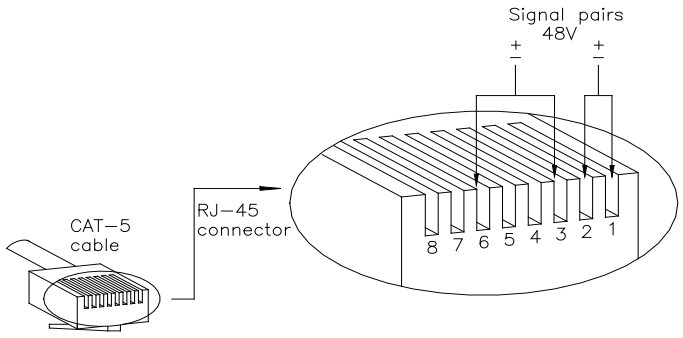

Fig. 6 Endpoint PSE RJ-45 Male Connector

Note:
IEEE802.3af assigns pairs on the RJ-45 connector and Cat.5 cable of Endpoint PSE.

Endpoint : -48V via TP pin 1, 2, 3, 6

5. Link Fault Pass Through

The Converter model of LFP (link fault pass through) in TX/FX converter application is controlled by the software and instantly takes effect. Link status on one port is propagated to the other port to notice the remote nodes. If TP port is unplugged, this converter stops transmission on fiber port. This causes the remote fiber node link to fail. LED shows the link failure on both TP and fiber ports. If fiber link fails, this converter restarts auto-negotiation on TP port but always stays in the link failure state. This causes the remote TP node link to fail. LED also shows the link failure on both TP and fiber ports. Refer to Fig. 9 shown below for the normal status when the link succeeds. Also refer to Fig. 10 and Fig. 11 for the erroneous status when TP Cable A, Fiber Cable B or Fiber Cable C fails to connect.

Note: Link fault pass through (LFP) function only takes effect as S1-Bit2 (see Fig. 15) is enabled. Disabled S1-Bit2 will turn this media converter into a general one.

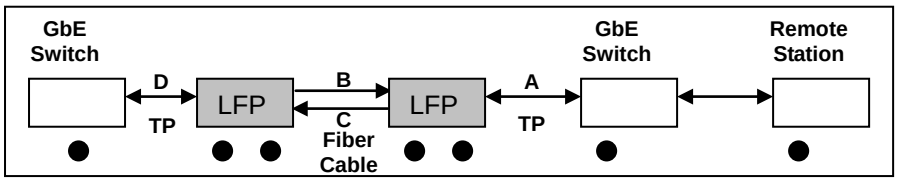

Fig. 9 Normal status via LFP converter

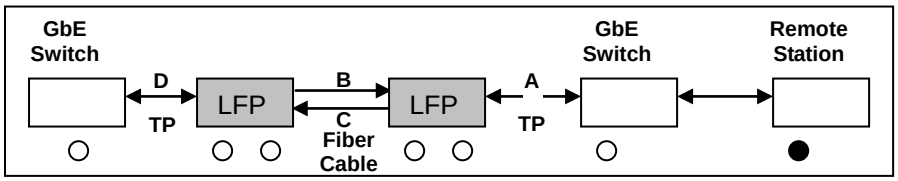

Fig. 10 The status as TP Cable A or D is broken

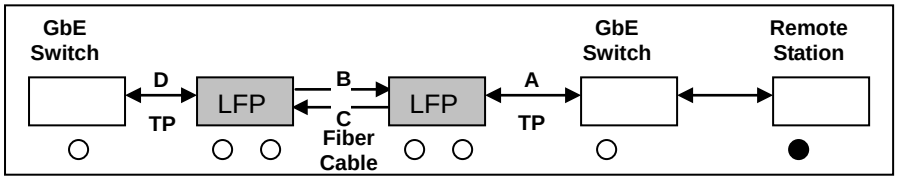

Fig. 11 The status as Fiber Cable B or C is broken

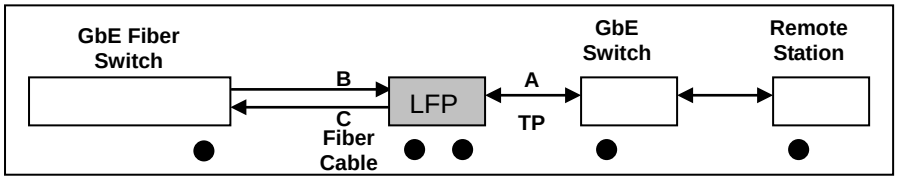

Fig. 12 Normal status via LFP converter

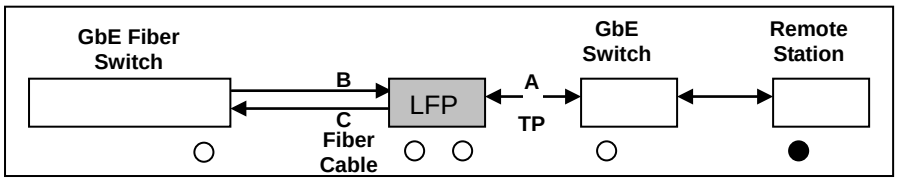

Fig. 13 The status as TP Cable A is broken

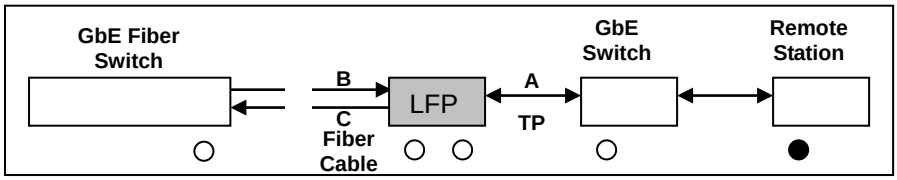

Fig. 14 The status as Fiber Cable B or C is broken

Note : ●	Indicates LNK/ACT LED Lit
○	Indicates LNK/ACT LED Off

Notice: The LFP (Link Fault Pass Through) function can work with different link partners (for Example: Fiber port on Switch). It does not need both two converters with the same model in pairs.

6. LED Description

LED	Color	Function
FX LNK/ACT	Green	Lit when fiber connection is good Blinks when fiber data is present
TP LNK/ACT	Green	Lit when TP connection is good Blinks when TP data is present
TP SPD	Green Amber	Green Lit when TP speed is 1000Mbps Amber Lit when TP speed is 100Mbps Off when TP speed is 10Mbps
PWR	Green	Lit when +5V power is coming up
PoE PSE-TP	Green	Lit when PoE feeding power is active
	Red	Lit when PoE feeding power is disrupted (In case of overtemperature/overcurrent)
4W	Green	Light when PD Class Type is Class 1
7W	Green	Light when PD Class Type is Class 2
15.4W	Green	Light when PD Class Type is Class 0 or 3

7. DIP Switch and Reset Button

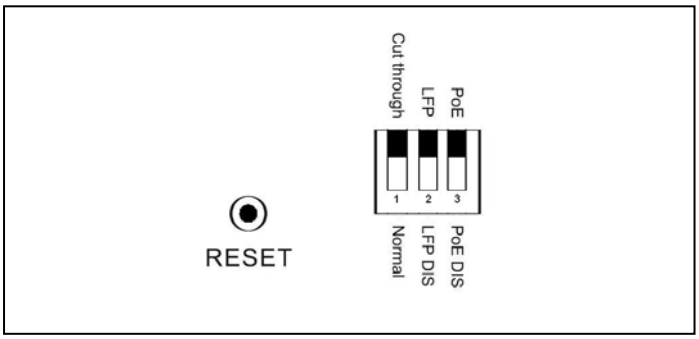

Fig. 15 Reset button and S1—Bit 1, 2, 3 Configuration and Setting

Reset : Once S1-1, S1-2 is changed, please press this button to have the setting taken effect.
S1-1 Bridge mode : Cut through (default) or Normal
S1-2 LFP : LFP enabled(default) or disabled
S1-3 PoE ON/OFF : Enable(default) or disable

Note:
1. S1-1 : Cut through mode support jumbo frame size max. up to 9216Bytes. Normal mode max. frame size up to 2048 Bytes
2. S1-3 : Must be set to PoE ON while power supplies to PD.

8. Cable Connection Parameter

1000Base-SX/LX network only support full-duplex mode. The Switch-based Media Converter breaks up TP and Fiber segments' collision domain to extend the cabling distance.

- **TP Cable Limitations:** Cat. 5 and up to 100m
- **Converter Fiber Cable Limitations:**

Mode	Multi-Mode Fiber 62.5/125µm		Multi-Mode Fiber 50/125µm	
	Bandwidth MHz-Km	Distance	Bandwidth MHz-Km	Distance
1000SX (SC/LC) 850nm	160	220m	400	500m
	200	275m	500	550m
1000LX (SC/LC) 1310nm/ 1550nm	Single-Mode Fiber 9/125µm Single-Mode transceiver 1310nm: 10Km Single-Mode transceiver 1550nm: 30/50Km			

9. PoE PSE TP-Fiber Technical Specifications

- **Standards** **:** IEEE802.3u 10/100Base-TX, 100Base-FX
  IEEE802.3z/ab 1000Base-T
  IEEE802.3af Power over Ethernet
- **UTP Cable** **:** Cat. 5 cable and up to100m
- **Fiber Cable** **:** 50/125, 62.5/125 or 100/140μm multi-mode
  8.3/125, 8.7/125, 9/125 or 10/125μm single-mode

- **PSE Power Feeding Supports :**
  "Endpoint" via TP pin 1, 2, 3, 6
- **LED Indicators :**
  POWER, PoE, TP LNK/ACT, SPD, FX LNK/ACT, 4W,7W,15.4W
- **Data Transfer Rate :**

Speed	Forwarding Rate
1000Mbps	148,8000 PPS
100Mbps	148,800 PPS
10Mbps	14,880 PPS

- **Flow Control :** IEEE802.3x compliant for full duplex
  Backpressure flow control for half duplex
- **Power Requirement :**
  AC Line: 100-240V 50-60Hz
- **Power Consumption :** 24W
- **Ambient Temperature :** 0° to 50°C
- **Humidity** **:** 5% to 90%

- **Dimensions :** 40(H) × 158(W) × 133(D) mm
- **CE Mark**

Note: For connecting this device to Router, Bridge or Switch, please refer to the corresponding device's Technical Manual.